



EBERLINE
SERVICES

0059969

May 6, 2003

Mr. Steve Trent
Fluor Hanford, Inc.
825 Jadwin Avenue
Richland, WA 99352

Reference: P.O. #630
Eberline Services R3-03-100-7462, SDG H2111

Dear Mr. Trent:

Enclosed is the data report for one water sample designated under SAF No. F03-007 received at Eberline Services on March 21, 2003. The sample was analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package



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1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2111 consisted of one water sample designated under SAF No. F03-007 with a Project Designation of: 200-PW-2/200-PW-4 OU- QC Sampling.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

The LCS and method blank were not scaled to the nominal aliquot of 0.01 L. No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

There was contamination in the method blank (5.67 pCi/L). The activity was below the RDL for Ni-63 (15 pCi/L). The RPD between sample B16LD9 and its sample duplicate was 43%, greater than the contract limit of 20%. The difference between sample B16LD9 and its sample duplicate was less than the RDL (15 pCi/L) for Ni-63. No other problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

No problems were encountered during the course of the reanalyses.

2.6 Iodine-129 Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.8 Total Uranium Analyses

There was activity in the method blank (0.027 µg/L). The activity was below the RDL (0.1 µg/L) for total uranium. No other problems were encountered during the course of the analyses.

2.9 Neptunium-237 Analyses

The LCS percent recovery (87%) was below the 3σ limits (91 to 109%), but within the contact protocol limits (80 to 120%). The Np-237 sample duplicate had a yield of 18% (limit 20%). There was no Np-237 activity in the client sample. No other problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion
Melissa C. Mannion
Program Manager

5/6/3
Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2111

S U M M A R Y D A T A S E C T I O N

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Melissa Mann
Prepared by

Melissa Mann
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
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Report date 05/06/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2111

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2111

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

SDG 7462

Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford

Contract No. 630

Case no SDG H2111

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R303100-01	B16LD9	200-PW-2	WATER		F03-007	F03-007-001	03/19/03 10:00
R303100-02	Lab Control Sample		WATER		F03-007		
R303100-03	Method Blank		WATER		F03-007		
R303100-04	Duplicate (R303100-01)	200-PW-2	WATER		F03-007		03/19/03 10:00
R303100-05	Spike (R303100-01)	200-PW-2	WATER		F03-007		03/19/03 10:00
R303100-06	Spike (R303100-01)	200-PW-2	WATER		F03-007		03/19/03 10:00

LAB SUMMARY

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Protocol Hanford

Version Ver 1.0

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

QC SUMMARY

SDG 7462
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2111

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7462	F03-007-001	B16LD9	WATER		10.82		03/21/03 2	R303100-01	7462-001
		Method Blank	WATER					R303100-03	7462-003
		Lab Control Sample	WATER					R303100-02	7462-002
		Duplicate (R303100-01)	WATER		10.82		03/21/03 2	R303100-04	7462-004
		Spike (R303100-01)	WATER		10.82		03/21/03 2	R303100-05	7462-005
		Spike (R303100-01)	WATER		10.82		03/21/03 2	R303100-06	7462-006

QC SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

SDG 7462

Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford

Contract No. 630

Case no SDG H2111

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED				QUALI-		
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Alpha Spectroscopy											
NP	WATER	Neptunium in Water	7043-176	5.0	1			1	1	1/1	
TH	WATER	Thorium, Isotopic in Water	7043-176	5.0	1			1	1	1/1	
Beta Counting											
SR	WATER	Total Strontium in Water	7043-176	10.0	1			1	1	1/1	
TC	WATER	Technetium 99 in Water	7043-176	10.0	1			1	1	1/1	
Gamma Spectroscopy											
I	WATER	Iodine 129 in Water	7043-176	5.0	1			1	1	1/1	
Kinetic Phosphorimetry (KPA)											
U_T	WATER	Uranium, Total in Water	7043-176	9.0	1			1	1	1/1	
Liquid Scintillation Counting											
C	WATER	Carbon 14 in Water	7043-176	10.0	1			1	1	1/1	1/1 X
H	WATER	Tritium in Water	7043-176	10.0	1			1	1	1/1	1/1 X
NI_L	WATER	Nickel-63 in Liquid	7043-176	10.0	1			1	1	1/1	2/1

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2111

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
R303100-01	B16LD9			7462-001	C		04/26/03	05/06/03	MCM	Carbon 14 in Water
03/19/03	200-PW-2		WATER	7462-001	H		04/29/03	05/06/03	MCM	Tritium in Water
03/21/03	F03-007-001	F03-007		7462-001	I		04/25/03	05/06/03	MCM	Iodine 129 in Water
				7462-001	NI_L		05/02/03	05/06/03	MCM	Nickel-63 in Liquid
				7462-001	NP		04/25/03	05/06/03	MCM	Neptunium in Water
				7462-001	SR		04/17/03	05/06/03	MCM	Total Strontium in Water
				7462-001	TC		04/20/03	05/06/03	MCM	Technetium 99 in Water
				7462-001	TH		04/23/03	05/06/03	MCM	Thorium, Isotopic in Water
				7462-001	U_T		04/23/03	05/06/03	MCM	Uranium, Total in Water
R303100-02	Lab Control Sample			7462-002	C		04/26/03	05/06/03	MCM	Carbon 14 in Water
			WATER	7462-002	H		04/30/03	05/06/03	MCM	Tritium in Water
		F03-007		7462-002	I		04/26/03	05/06/03	MCM	Iodine 129 in Water
				7462-002	NI_L		05/02/03	05/06/03	MCM	Nickel-63 in Liquid
				7462-002	NP		04/25/03	05/06/03	MCM	Neptunium in Water
				7462-002	SR		04/17/03	05/06/03	MCM	Total Strontium in Water
				7462-002	TC		04/19/03	05/06/03	MCM	Technetium 99 in Water
				7462-002	TH		04/23/03	05/06/03	MCM	Thorium, Isotopic in Water
				7462-002	U_T		04/23/03	05/06/03	MCM	Uranium, Total in Water
R303100-03	Method Blank			7462-003	C		04/26/03	05/06/03	MCM	Carbon 14 in Water
			WATER	7462-003	H		04/30/03	05/06/03	MCM	Tritium in Water
		F03-007		7462-003	I		04/27/03	05/06/03	MCM	Iodine 129 in Water
				7462-003	NI_L		05/02/03	05/06/03	MCM	Nickel-63 in Liquid
				7462-003	NP		04/25/03	05/06/03	MCM	Neptunium in Water
				7462-003	SR		04/17/03	05/06/03	MCM	Total Strontium in Water
				7462-003	TC		04/21/03	05/06/03	MCM	Technetium 99 in Water
				7462-003	TH		04/23/03	05/06/03	MCM	Thorium, Isotopic in Water
				7462-003	U_T		04/23/03	05/06/03	MCM	Uranium, Total in Water
R303100-04	Duplicate (R303100-01)			7462-004	C		04/26/03	05/06/03	MCM	Carbon 14 in Water
03/19/03	200-PW-2		WATER	7462-004	H		04/30/03	05/06/03	MCM	Tritium in Water
03/21/03		F03-007		7462-004	I		04/29/03	05/06/03	MCM	Iodine 129 in Water
				7462-004	NI_L		05/02/03	05/06/03	MCM	Nickel-63 in Liquid
				7462-004	NP		04/25/03	05/06/03	MCM	Neptunium in Water
				7462-004	SR		04/17/03	05/06/03	MCM	Total Strontium in Water
				7462-004	TC		04/20/03	05/06/03	MCM	Technetium 99 in Water
				7462-004	TH		04/23/03	05/06/03	MCM	Thorium, Isotopic in Water
				7462-004	U_T		04/23/03	05/06/03	MCM	Uranium, Total in Water

WORK SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

SDG 7462

Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford

Contract No. 630

Case no SDG H2111

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	MATRIX SAF No	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
R303100-05	Spike (R303100-01)		7462-005	C		04/26/03	05/06/03	MCM	Carbon 14 in Water
03/19/03	200-PW-2		7462-005	H		04/30/03	05/06/03	MCM	Tritium in Water
03/21/03		F03-007	7462-005	NI_L		05/02/03	05/06/03	MCM	Nickel-63 in Liquid
R303100-06	Spike (R303100-01)		7462-006	NI_L		05/02/03	05/06/03	MCM	Nickel-63 in Liquid
03/19/03	200-PW-2								
03/21/03		F03-007							

COUNTS OF TESTS BY SAMPLE TYPE										
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
C	F03-007	Carbon 14 in Water	C14_CHEM_LSC	1			1	1	1	5
H	F03-007	Tritium in Water	906.0_H3_LSC	1			1	1	1	5
I	F03-007	Iodine 129 in Water	I129_SEP_LEPS_GS	1			1	1		4
NI_L	F03-007	Nickel-63 in Liquid	NI63_LSC	1			1	1	2	6
NP	F03-007	Neptunium in Water	NP237_LLE_PLATE_AEA	1			1	1		4
SR	F03-007	Total Strontium in Water	SRTOT_SEP_PRECIP_GPC	1			1	1		4
TC	F03-007	Technetium 99 in Water	TC99_TR_SEP_LSC	1			1	1		4
TH	F03-007	Thorium, Isotopic in Water	THISO_IE_PLATE_AEA	1			1	1		4
U_T	F03-007	Uranium, Total in Water	UTOT_KPA	1			1	1		4
TOTALS				9			9	9	9	40

WORK SUMMARY

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Protocol Hanford

Version Ver 1.0

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2111

7462-003

Method Blank

METHOD BLANK

SDG <u>7462</u>	Client/Case no <u>Hanford</u>	SDG <u>H2111</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R303100-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7462-003</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>F03-007</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Tritium	10028-17-8	-7.86	11	19	400	U	H
Carbon 14	14762-75-5	-3.87	21	35	200	U	C
Nickel 63	13981-37-8	<u>5.67</u>	1.4	2.1	15		NI_L
Total Strontium	SR-RAD	0.015	0.25	0.36	2.0	U	SR
Technetium 99	14133-76-7	0.256	1.8	4.1	15	U	TC
Thorium 228	14274-82-9	-0.019	0.039	0.15		U	TH
Thorium 230	14269-63-7	0.058	0.077	0.15	1.0	U	TH
Thorium 232	TH-232	0	0.039	0.15	1.0	U	TH
Total Uranium (ug/L)	7440-61-1	<u>0.027</u>	0.009	0.019	0.10		U_T
Neptunium 237	13994-20-2	0	0.16	0.24	1.0	U	NP
Iodine 129	15046-84-1	0.166	0.98	2.2	5.0	U	I

200-PW-2/200-PW-4 OU - QC Sampling

QC-BLANK #44386

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

7462-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7462</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R303100-02</u> Dept sample id <u>7462-002</u>	Client/Case no <u>Hanford</u> SDG <u>H2111</u> Contract No. <u>630</u> Client sample id <u>Lab Control Sample</u> Material/Matrix <u>WATER</u> SAF No <u>F03-007</u>
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ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	267	19	20	400		H	278	11	96	81-119	80-120
Carbon 14	7960	88	35	200		C	8500	340	94	85-115	80-120
Nickel 63	259	5.5	2.7	15	B	NI_L	274	11	95	84-116	80-120
Total Strontium	51.2	1.2	0.40	2.0		SR	44.0	1.8	116	81-119	80-120
Technetium 99	1290	41	5.4	15		TC	1190	48	108	82-118	80-120
Thorium 230	21.4	2.1	0.14	1.0		TH	22.4	0.90	96	83-117	80-120
Total Uranium (ug/L)	91.5	11	0.19	0.10		U_T	90.5	3.6	101	76-124	80-120
Neptunium 237	18.9	0.19	0.17	1.0		NP	21.8	0.87	87	91-109	80-120
Iodine 129	538	3.9	4.3	5.0		I	508	20	106	90-110	80-120

200-PW-2/200-PW-4 OU - QC Sampling

QC-LCS #44385

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

7462-004

B16LD9

DUPLICATE

SDG <u>7462</u>		Client/Case no <u>Hanford</u> SDG <u>H2111</u>	
Contact <u>Melissa C. Mannion</u>		Contract <u>No. 630</u>	
DUPLICATE		ORIGINAL	
Lab sample id <u>R303100-04</u>	Lab sample id <u>R303100-01</u>	Client sample id <u>B16LD9</u>	
Dept sample id <u>7462-004</u>	Dept sample id <u>7462-001</u>	Location/Matrix <u>200-PW-2</u> <u>WATER</u>	
	Received <u>03/21/03</u>	Collected/Amount <u>03/19/03 10:00</u> <u>10.82</u>	
		Custody/SAF No <u>F03-007-001</u> <u>F03-007</u>	

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	-23.3	120	200	400	U	H	-12.8	120	210	U	-		
Carbon 14	-22.6	20	34	200	U	C	-13.6	21	36	U	-		
Nickel 63	6.36	1.4	2.1	15	B	NI_L	9.86	1.5	2.2	B	43	44	
Total Strontium	-0.048	0.28	0.38	2.0	U	SR	-0.114	0.27	0.37	U	-		
Technetium 99	2.11	2.0	5.7	15	U	TC	3.76	1.7	5.4	U	-		
Thorium 228	-0.018	0.037	0.14		U	TH	-0.027	0.054	0.21	U	-		
Thorium 230	0.110	0.11	0.14	1.0	U	TH	0	0.054	0.21	U	-		
Thorium 232	0	0.037	0.14	1.0	U	TH	0	0.054	0.21	U	-		
Total Uranium (ug/L)	0.480	0.055	0.019	0.10	B	U_T	0.474	0.054	0.019	B	1	31	
Neptunium 237	0	0.32	0.47	1.0	U	NP	0	0.20	0.30	U	-		
Iodine 129	-0.178	1.3	2.8	5.0	U	I	-0.004	1.0	2.4	U	-		

200-PW-2/200-PW-4 OU - QC Sampling

QC-DUP#1 44387

DUPLICATES

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Form <u>DVD-DUP</u>
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

7462-005

B16LD9

MATRIX SPIKE

SDG <u>7462</u>		Client/Case no <u>Hanford</u> SDG <u>H2111</u>	
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
MATRIX SPIKE		ORIGINAL	
Lab sample id <u>R303100-05</u>	Lab sample id <u>R303100-01</u>	Client sample id <u>B16LD9</u>	
Dept sample id <u>7462-005</u>	Dept sample id <u>7462-001</u>	Location/Matrix <u>200-PW-2</u> <u>WATER</u>	
	Received <u>03/21/03</u>	Collected/Amount <u>03/19/03 10:00</u> <u>10.82</u>	
		Custody/SAF No <u>F03-007-001</u> <u>F03-007</u>	

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC 3σ % (TOTAL)	LMTS LIMITS	PROTOCOL
Tritium	29100	510	200	400	X	H	29200	1200	-12.8	120	100	84-116	60-140
Carbon 14	57200	580	110	200	X	C	63800	2600	-13.6	21	90	85-115	60-140
Nickel 63	940	19	5.2	15	B	NI_L	960	38	9.86	1.5	97	84-116	

200-PW-2/200-PW-4 OU - QC Sampling

QC-MS#1 44388

MATRIX SPIKES

Page 1

SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-MS</u>
Version <u>3.06</u>
Report date <u>05/06/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

7462-006

B16LD9

MATRIX SPIKE

SDG <u>7462</u>		Client/Case no <u>Hanford</u> SDG <u>H2111</u>	
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
MATRIX SPIKE		ORIGINAL	
Lab sample id <u>R303100-06</u>	Lab sample id <u>R303100-01</u>	Client sample id <u>B16LD9</u>	
Dept sample id <u>7462-006</u>	Dept sample id <u>7462-001</u>	Location/Matrix <u>200-PW-2</u> <u>WATER</u>	
	Received <u>03/21/03</u>	Collected/Amount <u>03/19/03 10:00</u> <u>10.82</u>	
		Custody/SAF No <u>F03-007-001</u> <u>F03-007</u>	

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC 3σ % (TOTAL)	LMTS LIMITS	PROTOCOL
Nickel 63	928	19	5.2	15	B NI_L	960	38	9.86	1.5	96	84-116	

200-PW-2/200-PW-4 OU - QC Sampling

QC-MS#1 44389

MATRIX SPIKES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-MS</u>
Version <u>3.06</u>
Report date <u>05/06/03</u>

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2111

7462-001

B16LD9

DATA SHEET

SDG <u>7462</u>	Client/Case no <u>Hanford</u>	SDG <u>H2111</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R303100-01</u>	Client sample id <u>B16LD9</u>	
Dept sample id <u>7462-001</u>	Location/Matrix <u>200-PW-2</u>	<u>WATER</u>
Received <u>03/21/03</u>	Collected/Amount <u>03/19/03 10:00</u>	<u>10.82</u>
	Custody/SAF No <u>F03-007-001</u>	<u>F03-007</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Tritium	10028-17-8	-12.8	120	210	400	U	H
Carbon 14	14762-75-5	-13.6	21	36	200	U	C
Nickel 63	13981-37-8	9.86	1.5	2.2	15	B	NI_L
Total Strontium	SR-RAD	-0.114	0.27	0.37	2.0	U	SR
Technetium 99	14133-76-7	3.76	1.7	5.4	15	U	TC
Thorium 228	14274-82-9	-0.027	0.054	0.21		U	TH
Thorium 230	14269-63-7	0	0.054	0.21	1.0	U	TH
Thorium 232	TH-232	0	0.054	0.21	1.0	U	TH
Total Uranium (ug/L)	7440-61-1	0.474	0.054	0.019	0.10	B	U_T
Neptunium 237	13994-20-2	0	0.20	0.30	1.0	U	NP
Iodine 129	15046-84-1	-0.004	1.0	2.4	5.0	U	I

200-PW-2/200-PW-4 OU - QC Sampling

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>05/06/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

Test NP Matrix WATER
SDG 7462
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NEPTUNIUM IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2111

RESULTS

LAB RAW SUF- Neptunium
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID 237

Preparation batch 7043-176

R303100-01	7462-001	B16LD9	U
R303100-02	7462-002	LCS (QC ID=44385)	LOW
R303100-03	7462-003	BLK (QC ID=44386)	U
R303100-04	7462-004	Duplicate (R303100-01)	- U

Nominal values and limits from method RDLs (pCi/L) 1.0
200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST	FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD PREPARED YZED DETECTOR

Preparation batch 7043-176 2σ prep error 5.0 % Reference Lab Notebook 7043 pg. 176

R303100-01	B16LD9	0.30	0.500	27	102	37	04/24/03	04/25	SS-005
R303100-02	LCS (QC ID=44385)	0.17	0.500	49	102		04/24/03	04/25	SS-006
R303100-03	BLK (QC ID=44386)	0.24	0.500	34	102		04/24/03	04/25	SS-008
R303100-04	Duplicate (R303100-01) (QC ID=44387)	0.47	0.500	18	102	37	04/24/03	04/25	SS-009

Nominal values and limits from method 1.0 0.500 20-105 100 180

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
CP-050	Environmental Water Filtration and Preservation, rev 3	
CP-930	Neptunium from Solids and Water by Extraction Chromatography, rev 0	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA 0.30 ± 0.26
FOR 4 SAMPLES	YIELD 32 ± 26

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

Test TH Matrix WATER
SDG 7462
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN WATER

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2111

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Thorium 230

Preparation batch 7043-176

R303100-01	7462-001	B16LD9	U
R303100-02	7462-002	LCS (QC ID=44385)	ok
R303100-03	7462-003	BLK (QC ID=44386)	U
R303100-04	7462-004	Duplicate (R303100-01)	- U

Nominal values and limits from method RDLs (pCi/L) 1.0

200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST	FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD PREPARED YZED DETECTOR

Preparation batch 7043-176 2σ prep error 5.0 % Reference Lab Notebook 7043 pg. 176

R303100-01	B16LD9	0.21	0.500	56	174	35	04/22/03	04/23	SS-047
R303100-02	LCS (QC ID=44385)	0.14	0.500	86	174		04/22/03	04/23	SS-048
R303100-03	BLK (QC ID=44386)	0.15	0.500	89	174		04/22/03	04/23	SS-049
R303100-04	Duplicate (R303100-01) (QC ID=44387)	0.14	0.500	91	175	35	04/22/03	04/23	SS-050

Nominal values and limits from method 1.0 0.500 20-110 150 100 180

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA 0.16 ± 0.067
FOR 4 SAMPLES	YIELD 80 ± 33

METHOD SUMMARIES

Page 2

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

Test SR Matrix WATER
SDG 7462
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN WATER

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2111

RESULTS

LAB	RAW	SUF-		Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Strontium
Preparation batch 7043-176				
R303100-01		7462-001	B16LD9	U
R303100-02		7462-002	LCS (QC ID=44385)	ok
R303100-03		7462-003	BLK (QC ID=44386)	U
R303100-04		7462-004	Duplicate (R303100-01)	- U

Nominal values and limits from method RDLs (pCi/L) 2.0
200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7043-176 2σ prep error 10.0 % Reference Lab Notebook 7043 pg. 176													
R303100-01		B16LD9	0.37	0.500			91		400			29 04/17/03	04/17 GRB-201
R303100-02		LCS (QC ID=44385)	0.40	0.500			78		400			04/17/03	04/17 GRB-202
R303100-03		BLK (QC ID=44386)	0.36	0.500			83		400			04/17/03	04/17 GRB-203
R303100-04		Duplicate (R303100-01) (QC ID=44387)	0.38	0.500			84		400			29 04/17/03	04/17 GRB-204

Nominal values and limits from method 2.0 0.500 100 180

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-380 Strontium in Water Samples, rev 0

AVERAGES ± 2 SD MDA 0.38 ± 0.034
FOR 4 SAMPLES YIELD 84 ± 11

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

Test TC Matrix WATER
SDG 7462
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN WATER
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2111

RESULTS

LAB	RAW	SUF-		Technetium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	99
Preparation batch 7043-176				
R303100-01	7462-001	B16LD9		U
R303100-02	7462-002	LCS (QC ID=44385)		ok
R303100-03	7462-003	BLK (QC ID=44386)		U
R303100-04	7462-004	Duplicate (R303100-01)		- U

Nominal values and limits from method RDLs (pCi/L) 15
200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7043-176 2σ prep error 10.0 % Reference Lab Notebook 7043 pg. 176															
R303100-01		B16LD9	5.4	0.100			91		50			32	04/15/03	04/20	GRB-222
R303100-02		LCS (QC ID=44385)	5.4	0.100			95		50				04/15/03	04/19	GRB-219
R303100-03		BLK (QC ID=44386)	4.1	0.100			93		100				04/15/03	04/21	GRB-229
R303100-04		Duplicate (R303100-01)	5.7	0.100			89		50			32	04/15/03	04/20	GRB-224
		(QC ID=44387)													

Nominal values and limits from method 15 0.100 20-105 50 180

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
CP-021	Preparation of Tc-99m Tracer, rev 2	
CP-002	Q.C. Preparation, rev 4	
CP-003	Addition of Carriers and Tracers, rev 5	
CP-430	Technetium-99 Purification (Water) by Extraction Chromatography, rev 0	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA 5.2 ± 1.4
FOR 4 SAMPLES	YIELD 92 ± 5

METHOD SUMMARIES

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Lab id EBRLINE
Protocol Hanford
Version Ver 1.0
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Version 3.06
Report date 05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

Test I Matrix WATER
 SDG 7462
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN WATER

GAMMA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2111

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Iodine 129

Preparation batch 7043-176

R303100-01	7462-001	B16LD9	U
R303100-02	7462-002	LCS (QC ID=44385)	ok
R303100-03	7462-003	BLK (QC ID=44386)	U
R303100-04	7462-004	Duplicate (R303100-01)	- U

Nominal values and limits from method RDLs (pCi/L) 5.0
 200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/L L FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7043-176 2σ prep error 5.0 % Reference Lab Notebook 7043 pg. 176

R303100-01	B16LD9	2.4	0.250	95	1099	37	04/23/03	04/25	XSPEC-004
R303100-02	LCS (QC ID=44385)	4.3	0.250	95	1421		04/23/03	04/26	XSPEC-004
R303100-03	BLK (QC ID=44386)	2.2	0.250	97	1256		04/23/03	04/27	XSPEC-004
R303100-04	Duplicate (R303100-01) (QC ID=44387)	2.8	0.250	94	860	41	04/23/03	04/29	XSPEC-004

Nominal values and limits from method 5.0 0.250 20-105 300 100 180

PROCEDURES REFERENCE 1129_SEP_LEPS_GS
 CP-530 Iodine-129 Purification, rev 0

AVERAGES ± 2 SD MDA 2.9 ± 1.9
 FOR 4 SAMPLES YIELD 95 ± 3

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

Test U I Matrix WATER
SDG 7462
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, TOTAL IN WATER
KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
Contract No. 630
Contract SDG H2111

RESULTS

LAB	RAW	SUF-		Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Uranium

Preparation batch 7043-176

R303100-01		7462-001	B16LD9	0.474
R303100-02		7462-002	LCS (QC ID=44385)	ok
R303100-03		7462-003	BLK (QC ID=44386)	<u>0.027</u>
R303100-04		7462-004	Duplicate (R303100-01)	ok

Nominal values and limits from method RDLs (ug/L) 0.10
200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	ug/L	L	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR

Preparation batch 7043-176 2σ prep error 9.0 % Reference Lab Notebook 7043 pg. 176

R303100-01		B16LD9	0.019	0.0200								35 04/23/03 04/23	KPA-001
R303100-02		LCS (QC ID=44385)	<u>0.19</u>	0.0200								04/23/03 04/23	KPA-001
R303100-03		BLK (QC ID=44386)	0.019	0.0200								04/23/03 04/23	KPA-001
R303100-04		Duplicate (R303100-01) (QC ID=44387)	0.019	0.0200								35 04/23/03 04/23	KPA-001

Nominal values and limits from method 0.10 0.0200 180

PROCEDURES	REFERENCE	UTOT_KPA
CP-044		Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 4
CP-928		Total Uranium by Kinetic Phosphorimetry, rev 5

AVERAGES ± 2 SD	MDA	<u>0.062</u> ± <u>0.17</u>
FOR 4 SAMPLES	YIELD	_____ ± _____

METHOD SUMMARIES

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Lab id	<u>EBRLNE</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
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Report date	<u>05/06/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

Test C Matrix WATER

SDG 7462

Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford

Contract No. 630

Contract SDG H2111

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14

Preparation batch 7043-176

R303100-01	7462-001	B16LD9	U	
R303100-02	7462-002	LCS (QC ID=44385)	ok	
R303100-03	7462-003	BLK (QC ID=44386)	U	
R303100-04	7462-004	Duplicate (R303100-01)	-	U
R303100-05	7462-005	Spike (R303100-01)	ok	X

Nominal values and limits from method RDLs (pCi/L) 200

200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7043-176 2σ prep error 10.0 % Reference Lab Notebook 7043 pg. 176

R303100-01	B16LD9	36	0.0300	100	100	38	04/25/03	04/26	LSC-005
R303100-02	LCS (QC ID=44385)	35	0.0300	100	100		04/25/03	04/26	LSC-005
R303100-03	BLK (QC ID=44386)	35	0.0300	100	100		04/25/03	04/26	LSC-005
R303100-04	Duplicate (R303100-01)	34	0.0300	100	100	38	04/25/03	04/26	LSC-005
	(QC ID=44387)								
R303100-05	Spike (R303100-01)	110	0.0200	100	22	38	04/25/03	04/26	LSC-005
	(QC ID=44388)								

Nominal values and limits from method 200 0.0300 50 180

PROCEDURES	REFERENCE	C14_CHEM_LSC
	CP-241	Carbon-14 in Aqueous Samples, rev 4

AVERAGES ± 2 SD	MDA	50	±	67
FOR 5 SAMPLES	YIELD	100	±	0

METHOD SUMMARIES

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-LMS

Version 3.06

Report date 05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

Test H Matrix WATER
 SDG 7462
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN WATER
 LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H2111

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Tritium

Preparation batch 7043-176

R303100-01	7462-001	B16LD9	U
R303100-02	7462-002	LCS (QC ID=44385)	ok
R303100-03	7462-003	BLK (QC ID=44386)	U
R303100-04	7462-004	Duplicate (R303100-01)	- U
R303100-05	7462-005	Spike (R303100-01)	ok X

Nominal values and limits from method RDLs (pCi/L) 400

200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/L L FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7043-176 2σ prep error 10.0 % Reference Lab Notebook 7043 pg. 176

R303100-01	B16LD9	210	0.0100	100	100	41	04/29/03	04/29	LSC-007
R303100-02	LCS (QC ID=44385)	20	1.00	10	100		04/29/03	04/30	LSC-007
R303100-03	BLK (QC ID=44386)	19	1.00	10	100		04/29/03	04/30	LSC-007
R303100-04	Duplicate (R303100-01) (QC ID=44387)	200	0.0100	100	100	42	04/29/03	04/30	LSC-007
R303100-05	Spike (R303100-01) (QC ID=44388)	200	0.0300	33	100	42	04/29/03	04/30	LSC-007

Nominal values and limits from method 400 0.0100 25 180

PROCEDURES REFERENCE 906.0_H3_LSC
 CP-210 Tritium in Water Samples by Distillation, rev 6

AVERAGES ± 2 SD MDA 130 ± 200
 FOR 5 SAMPLES YIELD 51 ± 92

METHOD SUMMARIES

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Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
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 Report date 05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2111

Test NI L Matrix WATER
SDG 7462
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL-63 IN LIQUID

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2111

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 7043-176

R303100-01	7462-001	B16LD9	9.86
R303100-02	7462-002	LCS (QC ID=44385)	ok
R303100-03	7462-003	BLK (QC ID=44386)	<u>5.67</u>
R303100-04	7462-004	Duplicate (R303100-01)	ok
R303100-05	7462-005	Spike (R303100-01)	ok
R303100-06	7462-006	Spike (R303100-01)	ok

Nominal values and limits from method RDLs (pCi/L) 15
200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7043-176 2σ prep error 10.0 % Reference Lab Notebook 7043 pg. 176

R303100-01	B16LD9	2.2	0.500	100	100	44	05/02/03	05/02	LSC-004
R303100-02	LCS (QC ID=44385)	2.7	0.500	100	60		05/02/03	05/02	LSC-004
R303100-03	BLK (QC ID=44386)	2.1	0.500	100	100		05/02/03	05/02	LSC-004
R303100-04	Duplicate (R303100-01) (QC ID=44387)	2.1	0.500	100	100	44	05/02/03	05/02	LSC-004
R303100-05	Spike (R303100-01) (QC ID=44388)	5.2	0.500	100	<u>17</u>	44	05/02/03	05/02	LSC-004
R303100-06	Spike (R303100-01) (QC ID=44389)	5.2	0.500	100	<u>17</u>	44	05/02/03	05/02	LSC-004

Nominal values and limits from method 15 0.500 50 180

PROCEDURES REFERENCE NI63_LSC
CP-281 Nickel-63 Purification By Extraction
Chromatography, rev 0

AVERAGES ± 2 SD MDA 3.2 ± 3.1
FOR 6 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 05/06/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2111

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 23

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2111

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2111

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2111

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2111

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
 - B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
 - H Similar to 'L' except the recovery was high.
 - P The RESULT is 'preliminary'.
 - X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
 - 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2111

DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2111

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2111

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
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Case no SDG H2111

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2111

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2111

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2111

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
 - * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.
- MDAs are underlined if greater than the printed RDL.
- * Aliquots are underlined if less than the nominal value specified for the method.
 - * Preparation factors are underlined if greater than the nominal value specified for the method.
 - * Dilution factors are underlined if greater than the nominal value specified for the method.
 - * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
 - * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
 - * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 35

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2111

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
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Report date 05/06/03

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SAMPLE DELIVERY GROUP H2111

SDG 7462
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2111

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRINE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/03

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F03-007-001		Page 1 of 2				
Collector <u>MBIARS</u> Johansen/Pfister/Hughes <u>1000</u>		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days				
Project Designation 200-PW-2/200-PW-4 OU - QC Sampling		Sampling Location 200-PW-2 <u>H2111 (7462)</u>		SAF No. F03-007		Air Quality <input type="checkbox"/>								
Ice Chest No. <u>ERC 02 105</u>		Field Logbook No. <u>1</u>		COA 117504ES10		Method of Shipment Federal Express								
Shipped To EBERLINE SERVICES (Formerly TMA)		Offsite Property No. <u>A030184</u>		Bill of Lading/Air Bill No. <u>SEE OSPC</u>										
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage		Preservation		Cool 4C	Cool 4C	HCL to pH < 2 Cool 4C	HNO3 to pH < 2	HNO3 to pH < 2	HNO3 to pH < 2	HNO3 to pH < 2	HNO3 to pH < 2	HCL to pH < 2	None	
		Type of Container		aG	aG	aG	P	P	P	P	P	P	P	P
		No. of Container(s)		4	2	2	1	1	2	1	1	1	1	1
		Volume		1000mL	1000mL	1000mL	1000mL	120mL 500 mL	1000mL	1000mL	1000mL	250mL 500 mL	250mL	250mL
SAMPLE ANALYSIS				Pesticides - 8061	Chloro- Hydrocarbons - EPA 8151	Oil & Grease - 413.1	Isotopic Thorium (Thorium-232)	Total Uranium	Strontium-89,90 - Total Sr	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3; Carbon-14	
Sample No.	Matrix *	Sample Date	Sample Time											
B16LD9	WATER	3-19-03	1000											
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix * S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other		
Relinquished By/Removed From <u>FH</u>		Date/Time <u>3/19/03 1045</u>		Received By/Stored In <u>ERC</u>		Date/Time <u>3/19/03 1045</u>		<u>tm5319103</u> ** The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis. Personnel not available to relinquish samples from the 3728 Ref # <u>34</u> on <u>3/20/03</u>						
Relinquished By/Removed From <u>Mayhew/Ammons</u>		Date/Time <u>3/20/03 0930</u>		Received By/Stored In <u>DOGALE/Deh</u>		Date/Time <u>3/20/03 0930</u>								
Relinquished By/Removed From <u>3 JOALC/Deh</u>		Date/Time <u>3/20/03 0930</u>		Received By/Stored In <u>FED EX</u>		Date/Time <u>1000 3-20-03</u>								
Relinquished By/Removed From <u>FED EX</u>		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
LABORATORY SECTION		Received By		Title				Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time						

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-007-001		Page 2 of 2		
Collector <i>MJ 3/19/03</i> Johansen/Pfister/Hughes		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 7N Data Turnaround 45 Days		
Project Designation 200-PW-2/200-PW-4 OU - QC Sampling		Sampling Location 200-PW-2		<i>H2111 (7462)</i>		SAF No. F03-007		Air Quality <input type="checkbox"/>		
Ice Chest No. <i>ERC 02 105</i>		Field Logbook No.		COA 117504ES10		Method of Shipment Federal Express				
Shipped To EBERLINE SERVICES (Formerly TMA)		Offsite Property No. <i>A030 184</i>		Bill of Lading/Air Bill No. <i>SEE OSPC</i>						
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	None					
				Type of Container	P					
				No. of Container(s)	4					
				Volume	1000mL					
SAMPLE ANALYSIS				Iodine-129						
Sample No.	Matrix *	Sample Date	Sample Time							
B16LD9	WATER	3-19-03	1000	X						
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By/Removed From <i>FH</i> Date/Time <i>045</i>		Received By/Stored In <i>ERC</i> Date/Time <i>045</i>		<i>mj 3/19/03</i> **The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysts. Personnel not available to relinquish samples from the 3728 Ref # 3A on 3/20/03				S=Soil SE=Seiment SO=Solid SH=Shade W=Water O=Oil A=Air DS=Dross Solids DL=Dross Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other		
Relinquished By/Removed From <i>REF 3A</i> Date/Time <i>3 20 03 0930</i>		Received By/Stored In <i>SJGALE</i> Date/Time <i>3 20 03 0930</i>								
Relinquished By/Removed From <i>3JGALE</i> Date/Time <i>3 20 03 0930</i>		Received By/Stored In <i>FED EX</i> Date/Time								
Relinquished By/Removed From <i>FED EX</i> Date/Time		Received By/Stored In <i>Ref 3A</i> Date/Time <i>3-20-03 1000</i>								
Relinquished By/Removed From Date/Time		Received By/Stored In Date/Time								
Relinquished By/Removed From Date/Time		Received By/Stored In Date/Time								
Relinquished By/Removed From Date/Time		Received By/Stored In Date/Time								
Relinquished By/Removed From Date/Time		Received By/Stored In Date/Time								
Relinquished By/Removed From Date/Time		Received By/Stored In Date/Time								
LABORATORY SECTION		Received By		Title				Date/Time		
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time		

**ANALYTICAL SERVICES GROUP**

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 3-21-03

CoC No. F03-007-001

Container I.D. No. GRC-02-105 Requested TAT (Days) 45 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [] N/A []
2. Custody seals on shipping container dated & signed? Yes [✓] No [] N/A []
3. Custody seals on sample containers intact? Yes [✓] No [] N/A []
4. Custody seals on sample containers dated & signed? Yes [✓] No [] N/A []
5. Packing material is: Wet [] Dry [✓]
6. Number of samples in shipping container: 1
7. Number of containers per sample: 12 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No []
9. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [] Broken Container [] Missing []
11. Samples are: Preserved [✓] Not preserved [] Preservative HNO₃
12. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [] No [] Date _____

14. Received by [Signature] Date: 3-21-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Ion Chamber Ser. No. _____

Calibration date _____

Alpha Meter Ser. No. _____

Calibration date _____

Beta/Gamma Meter Ser. No. _____

Calibration date _____



3 April 2003

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Ave.
Richland, WA 99352

Subject: Contract No. 630
Analytical Data Package



Dear Mr. Trent:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0303L001
SDG #	H2111
SAF #	F03-007
Date Received	3-21-03
# Samples	1
Matrix	Water
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO	
GC Alcohol	
Metals	
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

r:\group\pm\orlette\tnu-hanford\data\fc_ltrs.doc

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD F03-007 142111

DATE RECEIVED: 03/21/03

LVL LOT # :0303L001

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

B16LD9

OIL & GREASE BY GRAV	001	W	03LOG010	03/19/03	03/25/03	03/26/03
OIL AND GREASE BY GR	001 MS	W	03LOG010	03/19/03	03/25/03	03/26/03

LAB QC:

OIL & GREASE BY GRAV	MB1	W	03LOG010	N/A	03/25/03	03/26/03
OIL AND GREASE BY GR	MB1 BS	W	03LOG010	N/A	03/25/03	03/26/03
OIL AND GREASE BY GR	MB1 BSD	W	03LOG010	N/A	03/25/03	03/26/03





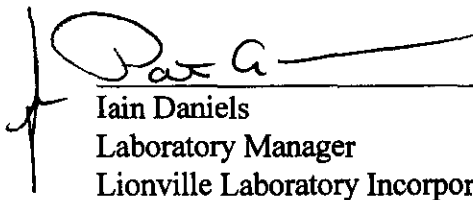
Analytical Report

Client: TNU-HANFORD F03-007 42111
LVL#: 0303L001

W.O.#: 11343-606-001-9999-00
Date Received: 03-21-03

INORGANIC NARRATIVE

1. This narrative covers the analysis of 1 water sample.
2. The sample was prepared and analyzed in accordance with the method checked on the attached glossary.
3. Sample holding time as required by the method and/or contract was met.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. The method blank was within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
7. The matrix spike recovery was within the 75-125% control limits.
8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

03-31-03
Date

njpw03-001

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	<u>EPA /600</u>	<u>SW846</u>	<u>OTHER</u>
Acidity	305.1		
___Alkalinity ___Bicarbonate ___Carbonate	310.1		
BOD	405.1		___ 5210B (b)
Ion Chromatography:			
___Bromide ___Chloride ___Fluoride	300.0	___ 9056	
___Nitrate ___Nitrite ___Phosphate	300.0	___ 9056	
___Sulfate ___Formate ___Acetate ___Oxalate	300.0	___ 9056	
Chloride	325.2	___ 9251	
Chlorine, Residual	330.5 (mod)		
Cyanide, Amenable to Chlorination	335.2	___ 9010B	
Cyanide, Total	335.2	___ 9010B	___ 9014 ___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable			___ 412 (a) ___ 4500CN-I (b)
COD	410.4(mod)		___ 5220C (b)
Color	110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	340.2		___ 4500-FC
Hardness, Calcium	215.2		
Hardness, Total	130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	353.2		
Ammonia	350.3		
Total ___ Kjeldahl ___ Organic Nitrogen	351.3		
Total ___ Organic ___ Inorganic Carbon	415.1	___ 9060	
Oil & Grease	413.1	___ 9070	
___ pH ___ pH; paper	150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	418.1		
Phenol	420.1	___ 420.2 ___ 9065 ___ 9066	
___Ortho ___ Total Phosphate	365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	160.5		
Sulfide	376.1	___ 9030B/9034 (acid soluble)	
Reactive ___ Cyanide ___ Sulfide		___ Section 7.3 (___ 9014 ___ 9030B)	
Silica	370.1		
Sulfite	377.1		
Sulfate	375.4	___ 9038	
Specific Conductance	120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach		1312	
Total ___ Dissolved ___ Suspended ___ Solids	160 ___ .1 ___ .2 ___ .3		
Total Organic Halides	450.1	___ 9020B	
Turbidity	180.1		
Volatile Solids:			
___Total ___ Dissolved ___ Suspended	160.4		
Other:		Method:	

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/26/03

CLIENT: TNU-HANFORD P03-007

LVL LOT #: 0303L001

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B16LD9	Oil & Grease Gravimetri	1.0	u MG/L	1.0	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/26/03

CLIENT: TNU-HANFORD P03-007

LVL LOT #: 0303L001

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LOG010-MB1	Oil & Grease Gravimetri	1.0	u MG/L	1.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/26/03

CLIENT: TNU-HANFORD F03-007

LVL LOT #: 0303L001

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B16LD9	Oil & Grease Gravimetr	47.6	1.0 u	51.4	92.6	1.0
BLANK10	03LOG010-MB1	Oil & Grease Gravimetr	52.6	1.0 u	50.8	103.5	1.0
		Oil & Grease - Grav M	51.3	1.0 u	51.4	99.8	1.0

A. P.

Discrepancies Between
Samples Labels and
CDC Record? Y or N
NOTES:

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F03-007-001		Page 1 of 2			
Collector <u>MJ 3/19/03</u> Johansen/Pfister/Hughes <u>hope</u>		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days			
Project Designation 200-PW-2/200-PW-4 OU - QC Sampling		Sampling Location 200-PW-2		SAF No. F03-007		Air Quality <input type="checkbox"/>							
Ice Chest No. <u>ERC 96 025</u>		Field Logbook No.		COA 117504ES10		Method of Shipment Federal Express							
Shipped To <u>MJ 3/19/03</u> <u>EBERLINE SERVICES (Formerly TMA) BECCA</u>		Offsite Property No. <u>A030168</u>				Bill of Lading/Air Bill No. <u>SEE OSPL</u>							
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage		Preservation	Cool 4C	Cool 4C	HCL to pH < 4 Cool 4C	HNO3 to pH < 2	HNO3 to pH < 2	HNO3 to pH < 2	HNO3 to pH < 2	HNO3 to pH < 2	HCL to pH < 4	Name	
		Type of Container	uG	uG	uG	P	P	P	P	P	P	P	P
		No. of Container(s)	4	2	1	1	2	1	1	1	1	1	
		Volume	1000mL	1000mL	1000mL	1000mL	120mL	1000mL	1000mL	1000mL	250mL	250mL	
SAMPLE ANALYSIS		Pesticides 8081	Chloro- herbicides - EPA8151	Oil & Grease - 413.1	Isotopic Thorium (Thorium-232)	Total Uranium	Strontium- 89.90 - Total Sr	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3; Carbon-14		
Sample No.	Matrix *	Sample Date	Sample Time										
B16LD9	WATER	3-19-03	1000	X	X	X							
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS					
Relinquished By/Removed From <u>MJ 3/19/03</u>		Date/Time <u>1045</u>		Received By/Stored In <u>ERC</u>		Date/Time <u>1045</u>		** The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis. Personnel not available to relinquish samples from the 3728 Ref # 3A on 3/20/02					
Relinquished By/Removed From <u>REF 3A</u>		Date/Time <u>0930</u>		Received By/Stored In <u>SJOALC</u>		Date/Time <u>0930</u>							
Relinquished By/Removed From <u>SJOALC</u>		Date/Time <u>0930</u>		Received By/Stored In <u>FED EX</u>		Date/Time <u>32003</u>							
Relinquished By/Removed From <u>Steve</u>		Date/Time <u>3/20/03</u>		Received By/Stored In <u>Steve</u>		Date/Time <u>0940</u>							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Matrix * S=Soil SE=Soil/Sealant SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time W=Wipe L=Liquid V=Vegetation X=Other					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time							
LABORATORY SECTION	Received By			Title			Date/Time						
FINAL SAMPLE DISPOSITION	Disposal Method			Disposed By			Date/Time						

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-007-001		Page 2 of 2													
Collector Johansen/Pfister/Hughes <i>MP 2/19/03</i>		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 7N Data Turnaround 45 Days													
Project Designation 200-PW-2/200-PW-4 OU - QC Sampling		Sampling Location 200-PW-2		SAF No. F03-007		Air Quality <input type="checkbox"/>															
Ice Chest No. <i>ERC-02-96 025</i>		Field Logbook No.		COA 117504ES10		Method of Shipment Federal Express															
Shipped To EDERLINE SERVICES (Formerly TMA) <i>BECA</i>		Offsite Property No. <i>A030168</i>		Bill of Lading/Air Bill No. <i>SEE OSLC</i>																	
POSSIBLE SAMPLE HAZARDS/REMARKS																					
Special Handling and/or Storage				Preservation	None																
				Type of Container	P																
				No. of Container(s)																	
				Volume	100 Gall																
SAMPLE ANALYSIS																					
Sample No.		Matrix *		Sample Date		Sample Time															
B16LD9		WATER		3-19-03		1000															
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS								Matrix *					
Relinquished By/Removed From <i>FH</i> Date/Time <i>1045</i>				Received By/Stored In <i>ERC</i> Date/Time				<p>** The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis.</p> <p>Personnel not available to relinquish samples from the 3728 Ref # <i>3A</i> on <i>3/20/03</i></p>								<p>S=Soil SE=Soilment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dram Solids DL=Dram Liquids T=Thane WI=Wipe L=Liquid V=Vegetation X=Other</p>					
<i>Machensen/Machensen</i> 3/19/03				<i>Ref # 3A</i> 3/19/03 1045																	
Relinquished By/Removed From Date/Time				Received By/Stored In Date/Time																	
<i>Ref 3A</i> 3/20/03 0930				<i>SIGALE</i> 3/20/03 0930																	
Relinquished By/Removed From Date/Time				Received By/Stored In Date/Time																	
<i>SIGALE</i> 3/20/03 0930				<i>FED EX</i>																	
Relinquished By/Removed From Date/Time				Received By/Stored In Date/Time																	
<i>Ref 3A</i> 3-21-03 0940				<i>SIGALE</i> 3-21-03 0940																	
Relinquished By/Removed From Date/Time				Received By/Stored In Date/Time																	
Relinquished By/Removed From Date/Time				Received By/Stored In Date/Time																	
LABORATORY SECTION		Received By		Title		Date/Time															
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time															

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

Client: TNU Hanford

Purchase Order/Project:

DATE: 3-21-03

AF# / SOW# / Release #: F03-007

Laboratory SDG #:

03031001

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

Exc 96.025 / 2.8°C

Laboratory Sample Custodian:

D. Smith

Laboratory Project Manager: